

**MaineGeneral Medical Center**

**Workplace Health**



**Atlantic Provinces Trucking Association**

**Maine Motor Transportation Association**

**Transportation Safety Conference**

**Commercial Driver Medical Fitness**

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# Commercial Driver Medical Fitness

## **Disclosures**

I have no financial interests in anything presented beyond general interests as an occupational physician and member of the American College of Occupational and Environmental Medicine.

# Commercial Driver Medical Fitness

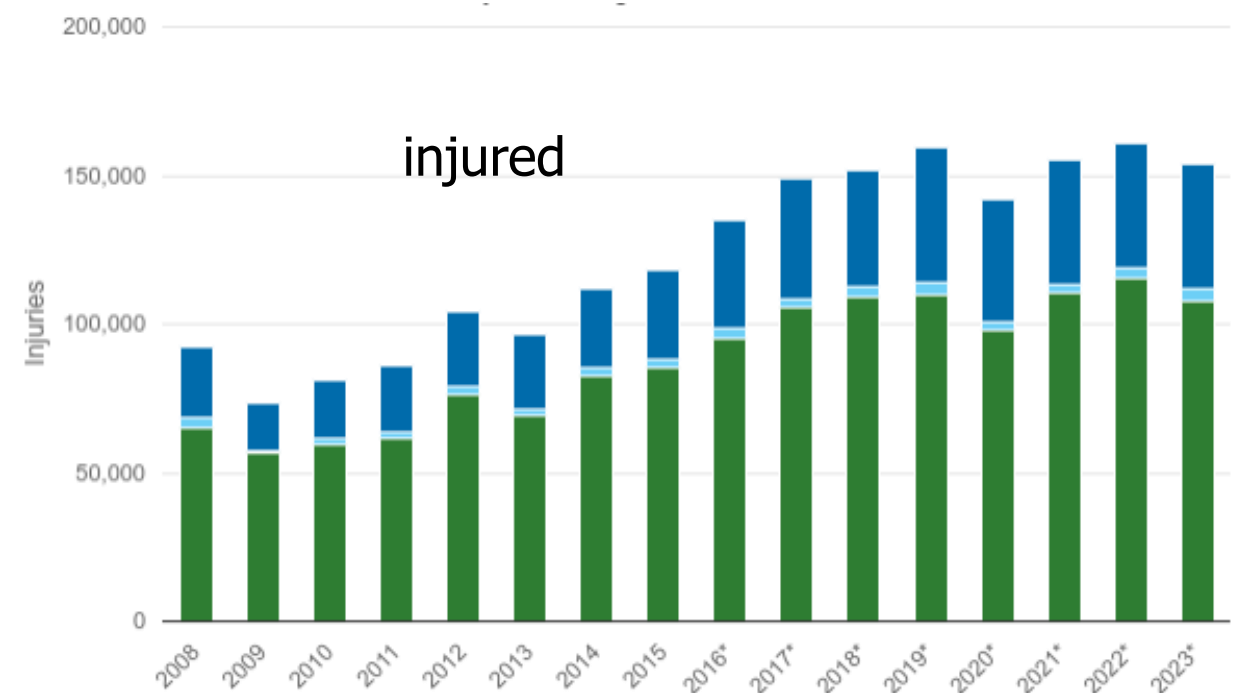
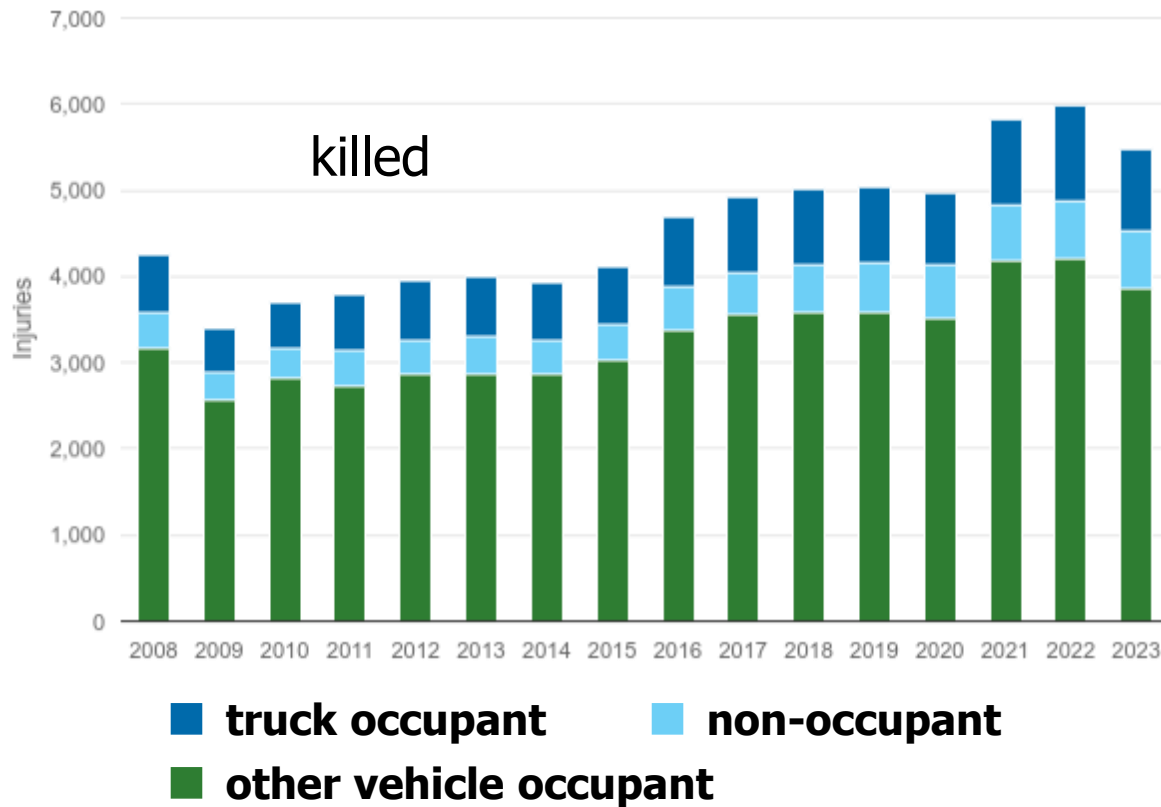
## **Presentation Organization**

1. General considerations
2. Vision
3. Hearing
4. Alcoholism
5. Schedule 1 drugs
6. Diabetes, including insulin use and insulin
7. Seizure and other neurological disorders
8. Sleep apnea
9. Hypertension (high blood pressure)
10. Cardiovascular disorders and physical abilities

# General Considerations

## Public and trucking industry interest

### People killed and injured in crashes involving large trucks



# General Considerations

## **Public and trucking industry interest**

Risk of crash with obstructive sleep apnea (OSA)

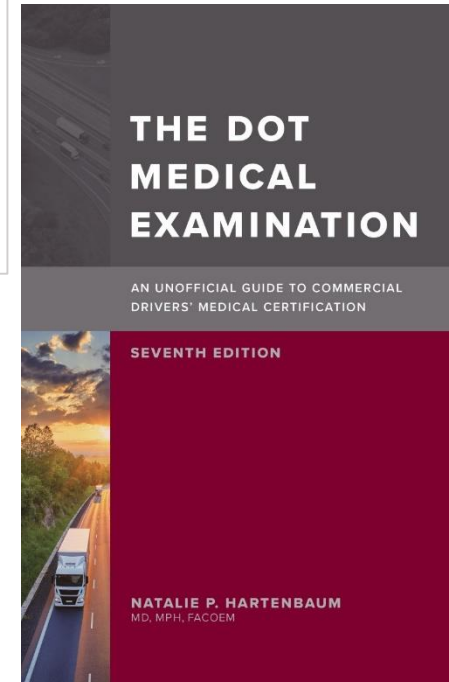
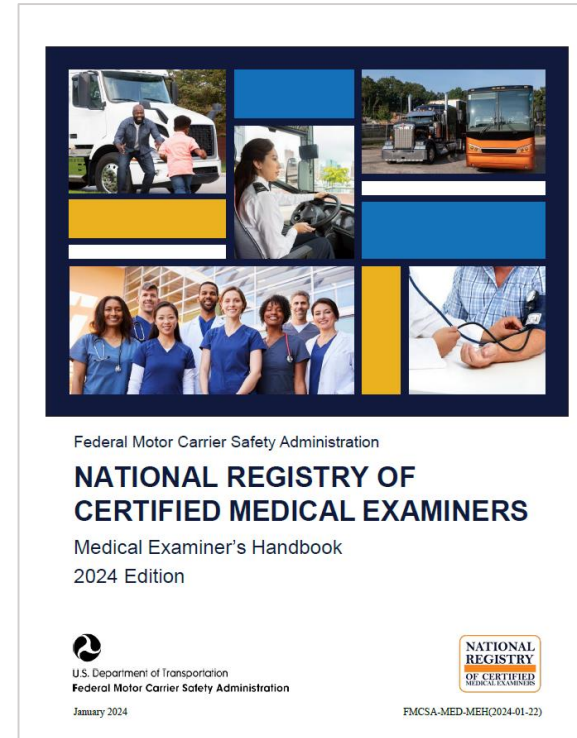
- Drivers with OSA – 4½-fold increased risk of crash compared to drivers without OSA.
- Risk of motor vehicle crashes annually in drivers is about:
  - 1 crash in 17 or more years (about 6%)
  - 1 crash in 4 to 5½ years with “more severe” OSA (over 18%).

# General Considerations

## Requirements and recommendations

Medical fitness of commercial motor vehicle (CMV) drivers.

- Requirements are in 49 CFR 391.41 physical requirements for drivers.
- **Recommendations are in the**
  - FMCSA *Medical Examiner's Handbook*
  - FMCSA Medical Review Board and Medical Expert Panel reports
  - *The DOT Medical Examination: An Unofficial Guide to Commercial Drivers' Medical Certification*, 7<sup>th</sup> edition by Natalie Hartenbaum



# General Considerations

## **Non-discretionary conditions**

Non-discretionary conditions – an examiner must immediately disqualify a driver who does not meet the standard.

Non-discretionary conditions include

1. vision – does not meet the standard without an exemption
2. hearing – does not meet the standard without an exemption
3. diabetes – if treated with insulin without an appropriately completed “Insulin-treated Diabetes Mellitus Assessment Form” MCSA-5870
4. seizure disorders – has epilepsy without an exemption
5. diagnosis of alcoholism
6. use of Schedule 1 drugs

# General Considerations

## **Non-discretionary conditions – advice**

Ensure that your drives can meet non-discretionary standards as well as you can without violating medical privacy.

- Enable them to be able to check their vision and hearing.
- Inform them that they must have added documentation for
  - insulin-treated diabetes
  - seizure disorders (an exemption)
- If they have issues with alcohol or drugs, direct them toward testing and treatment.



# Vision

## **Vision standard – 49 CFR 391.41**

The driver must have:

- 20/40 visual acuity each eye independently and in both eyes together with or without corrective lenses measured by Snellen eye chart
- 70 degrees peripheral vision
- ability to distinguish red, green and amber (yellow); or

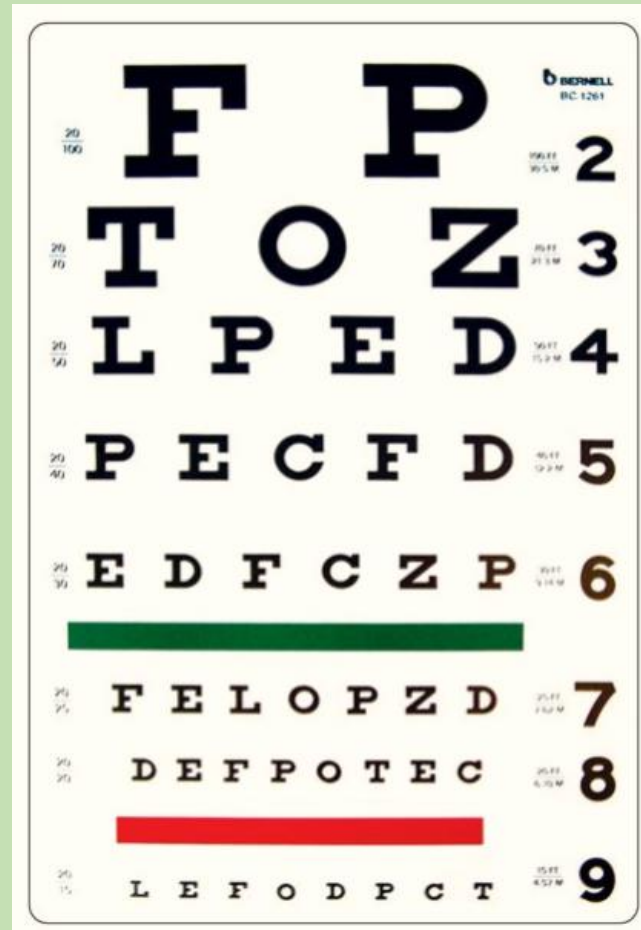
If the driver does not meet the vision requirement, he or she must be disqualified unless he or she has one eye that meets the standard and undergoes:

- evaluation by an ophthalmologist or optometrist who completes the Vision Evaluation Report form, MCSA-5871
- a road test by the motor carrier as specified in 49 CFR 391.31 Road test.
- an annual commercial driver's examination not more than 45 days after an ophthalmologist or optometrist signs and dates Form MCSA-587.

# Vision

## Vision standard – advice

Have a Snellen eye chart on a wall in a well-lighted area and a mark 20 feet away from the chart.



Snellen eye chart

# Vision

## **Vision standard – advice**

If a driver is tested by alternative means to a Snellen eye chart, they may request testing with a Snellen eye chart.

(Preferably, drivers do not try to remember Snellen eye chart contents.)

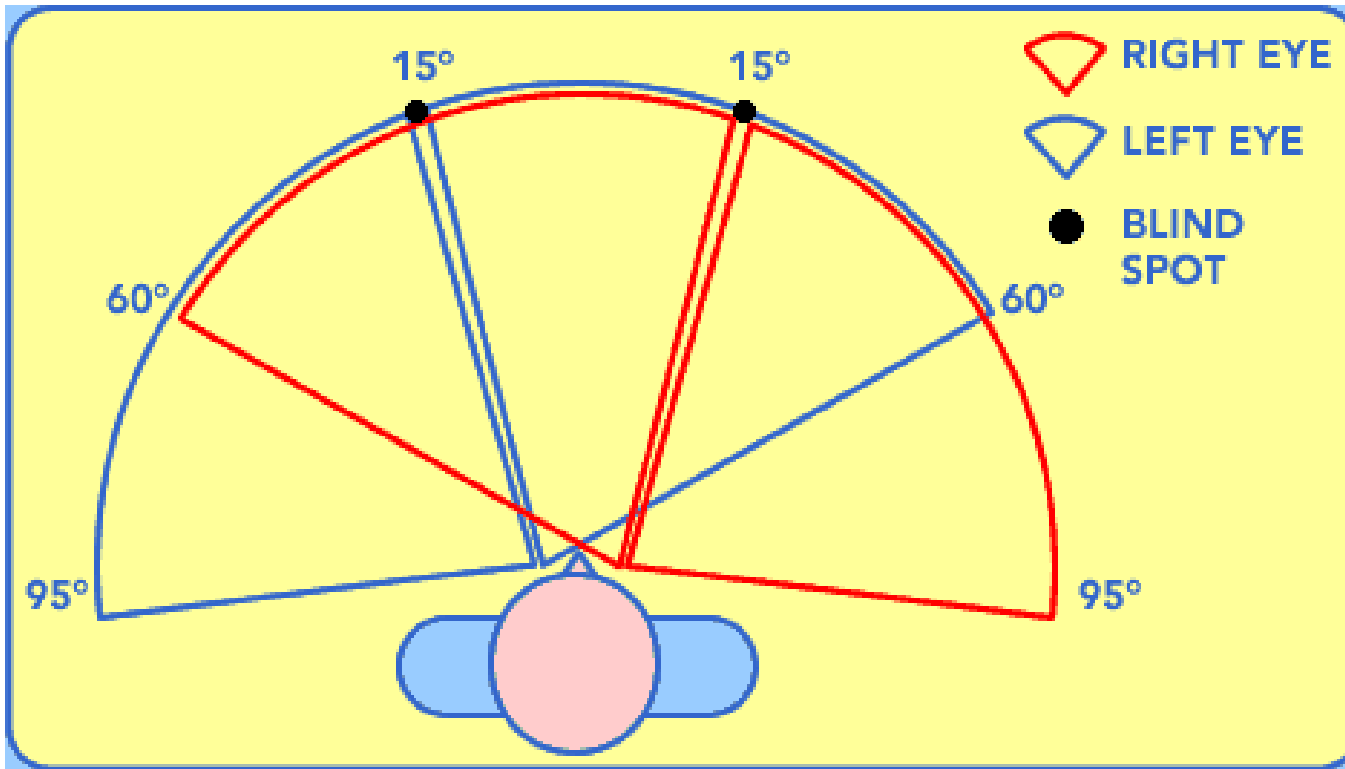


Titmus tester

# Vision

## Vision standard – peripheral vision

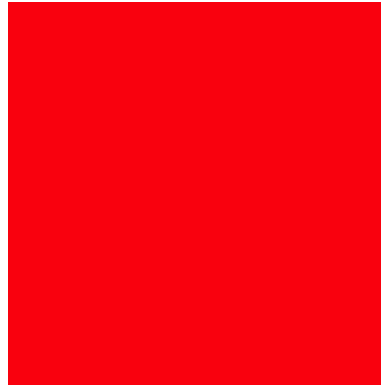
Examinee must look straight ahead and tell the examiner when they see an object moving forward from their side out of sight.



# Vision

## **Vision standard – color vision**

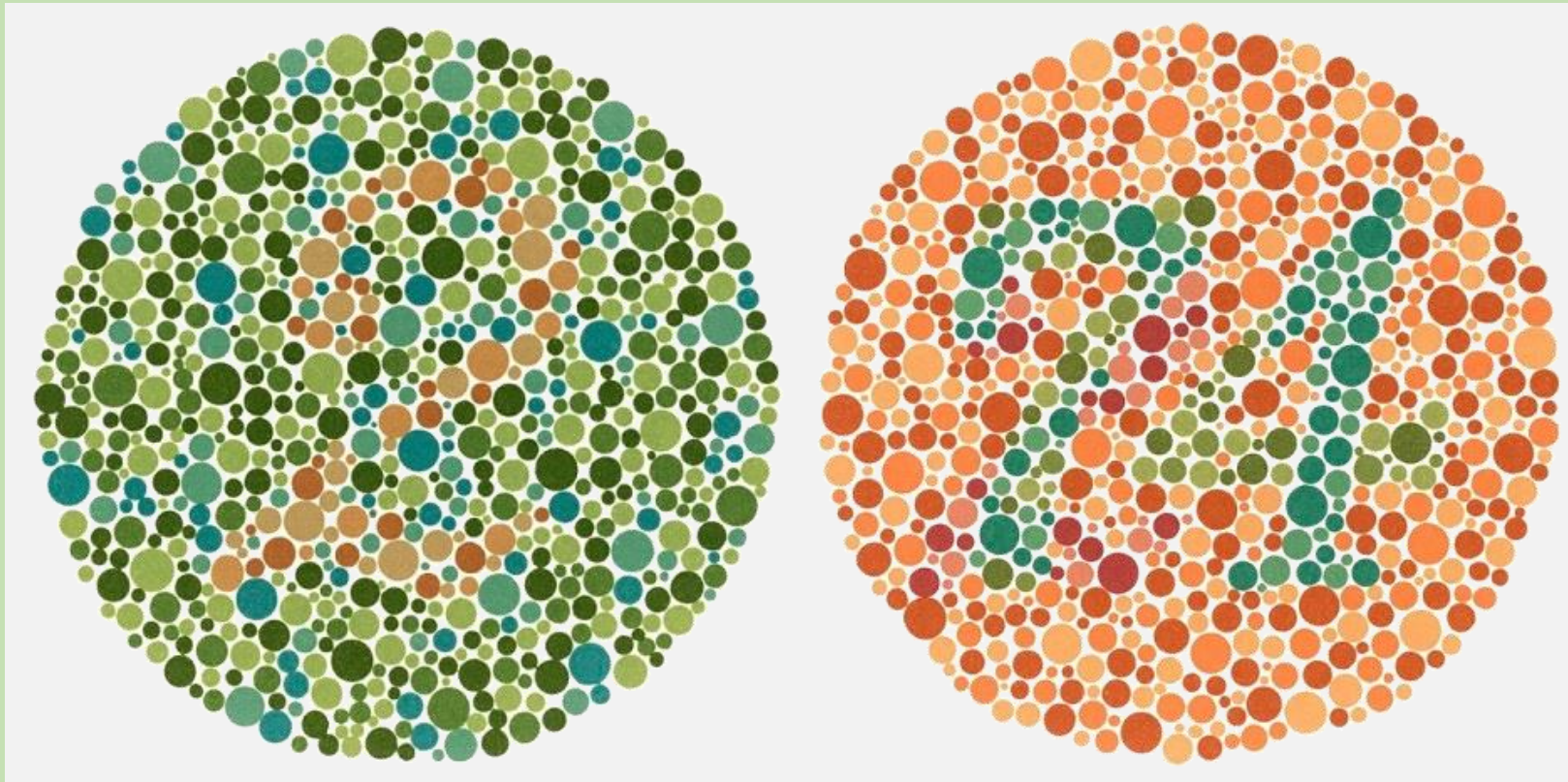
Driver must be able to distinguish red, green and amber.



# Vision

## **Vision standard – advice**

If a driver is given and cannot distinguish colors in the Ishihara test for color blindness, request simpler test.





# Vision

## **Vision standard – monocular vision, alternative vision standard**

Vision Evaluation Report form, MCSA-5871 must

- be completed by a licensed ophthalmologist or optometrist annually and within 45 days of their driver's medical examination, and show that the driver
  - meets the visual acuity and field, and color requirements in one eye
  - has a vision deficiency that is stable
  - has had time to adapt to and compensate for the change in vision.

The maximum certification length is 12 months.

# Hearing

## **Hearing standard – 49 CFR 341.**

The driver must have the ability

- to hear a forced whisper in the better ear at no less than 5 feet, with or without a hearing aid; or
- have a hearing loss in the better ear no greater than an average of 40 decibels at 500 Hz, 1000 Hz, and 2000 Hz with or without a hearing aid.



# Hearing

## Hearing standard – advice

Know how to perform the whisper test.



Perform forced whisper tests on driver whose hearing is in question.

If a driver cannot pass a whisper test, anticipate them undergoing an audiogram.

Advise drivers with hearing aids to bring them to the examination.

If the driver meets the requirement by use of a hearing aid, the hearing aid must be used while driving.

# Hearing

## **Hearing standard – advice**

Perform of the forced whisper test:

1. Stand at least 5 feet away from the driver to be tested.
2. Have the driver stand with one side toward the examiner.  
The driver should not be able to see the examiner's mouth.
3. The examiner whispers a sequence of numbers or words (for example, 66, 18, 23 or asphalt, platform, mountain) that the driver is asked to repeat.
4. Have the driver repeat the words.
5. Have the driver turn to the other side and repeat steps 3 and 4 using other numbers or words.

# Alcoholism and Drugs

## **Alcoholism – 49 CFR 391.41(b)(13)**

A driver cannot have a current clinical diagnosis of alcoholism.

An assessment by a professional qualified to conduct and alcohol use assessment may be requested by the examiner, but a substance abuse professional (SAP) is not required.

This does not include alcoholism in remission.

# Alcoholism and Drugs

## **Scheduled Drugs – 49 CFR 391.41(b)(12)**

A driver cannot use:

- any Schedule I drug in in 21 CFR 1308.11 or
- drugs from other Schedules in 21 CFR part 1308 except when the use is prescribed by a licensed medical practitioner who is
  - familiar with the driver's medical history and
  - has advised the driver that the substance will not adversely affect the driver's ability to safely operate a commercial motor vehicle.

# Alcoholism and Drugs

## **Drugs – advice**

Have a company policy for reasonable suspicion drug and alcohol testing.

If a driver seems impaired, have them tested according to policy.

Whenever a driver is prescribed or advised to take medication, the driver should reveal that he or she is a CMV driver and ask the clinician:

- whether the substance will adversely affect ability to operate a CMV safely
- if there is a suitable replacement for the drug if side effects include drowsiness or can affect reaction time or judgement.

# Diabetes

## **Diabetes and its effects on health**

Diabetes is a metabolic disorder resulting in elevated blood sugar.

In diabetes, the body does not produce enough or respond adequately to insulin to keep blood sugar at a level that does not elevate the likelihood of disease.

Problems associated with diabetes include (but are not limited to):

- altered consciousness
- pain and impaired sensation in limbs
- impaired vision
- vascular disease (atherosclerosis)
- kidney disease.

# Diabetes

## **Risk factors for diabetes**

Diabetes risk factors include (but are not limited to):

- overweight (BMI 25.1 to 29.9 kg/m<sup>2</sup>) or obese (BMI 30 kg/m<sup>2</sup> or over)
- age 45 years or older
- having a parent or sibling with type 2 diabetes
- being inactive (vigorous activity less than 3 times/week)
- having non-alcoholic fatty liver disease
- having had gestational diabetes (diabetes during pregnancy) or a baby with birth weight over 9 pounds
- being African-, Hispano-American, American Indian, or Alaskan Native.

# Diabetes

## **Risk factors for diabetes**

Symptoms of diabetes include (but are not limited to):

- frequent urination
- high level of thirst and fluid ingestion
- blurred vision
- fatigue
- unstable weight.



# Diabetes

## Diabetes diagnosis

Diagnostic criteria for diabetes from the American Diabetes Association

Level	Fasting blood sugar (mg/dL)	Glycosylated hemoglobin (HbA1c – %)	Glucose tolerance test
normal	below 100	below 5.7	below 140
insulin resistance	100 to 125	5.7 to 6.4	140 to 199
diabetes	125 or over	6.5 and over	200 or over
poorly-controlled diabetes	over 215	9.0 and over	–

# Diabetes

## Diabetes risk factors

Diabetes risk factors include (but are not limited to):

- overweight (BMI 25.1 to 29.9 kg/m<sup>2</sup>) or obese (BMI 30 kg/m<sup>2</sup> or over)
- age 45 years or older
- having a parent or sibling with type 2 diabetes
- being inactive (vigorous activity less than 3 times/week)
- having non-alcoholic fatty liver disease
- having had gestational diabetes (diabetes during pregnancy) or a baby with birth weight over 9 pounds
- being African-, Hispano-American, American Indian, or Alaskan Native.

# Diabetes

## **Diabetes and insulin – 49 CFR 391.41(b)(3)**

Drivers with diabetes that is treated with insulin are medically disqualified unless they meet the requirements in 49 CFR 391.46 Physical qualification standards for an individual with diabetes mellitus treated with insulin for control.

An Insulin-Treated Diabetes Mellitus Assessment Form, MCSA-5870 must be complete by the driver's treating clinician 45 or fewer days before the driver's NRCME examination.

# Diabetes

## **Drivers with diabetes – care**

Drivers with should undergo diabetes evaluation as follows:

- clinician visit for diabetes care every 6 months
- blood sugar checks multiple times daily or as directed by the treating clinician
- have HbA1c checked
  - every 3 months if diabetes is not well-controlled or if treatment changes
  - every 6 months if diabetes is well-controlled and treatment is stable.

# Diabetes

## **Drivers at risk for diabetes – advice**

Encourage drivers who are at risk for diabetes to:

- lose weight if they are overweight or obese
- adopt a healthy diet
- be active – engage in vigorous activity at least
  - 3 times/week
  - 30 minutes each session
- be tested for diabetes.

# Diabetes

## **Drivers with diabetes – advice**

Encourage drivers who are at risk for diabetes to:

- undergo clinician visit for diabetes care every 6 months
- check blood sugar multiple times daily or as directed by the treating clinician
- check HbA1c every 3 to 6 months depending on control and treatment
- take diabetes medicines as prescribed
- engage in at least 30 minutes of moderate activity at least 150 minutes weekly
- eat healthy foods.

# Seizure Disorders

## Seizure Disorders

Waiting periods and exemption for seizure disorders

- single seizure
  - known cause (medication reaction, high fever) – no waiting period, with confirmation of cause and clearance from treating clinicians
  - unknown cause – 5 years, no anti-seizure medication
- epilepsy – must have exemption to drive and is otherwise disqualifying
  - definition – two or more seizures or use of anti-seizure medication to control seizures
  - for an exemption,
    - unknown cause – 4 years on or off anti-seizure medication, stable for 2 years on medication dose if taking medication
    - free of seizures for 8 years on or off medication, 8 years after medication is discontinued

# Return to Duty Recommendations

## Waiting Periods

Waiting period suggested in the *Medical Examiner's Handbook*

- Neurologic disorders
  - stroke – 1 year (recurrence rate of 10 to 15% and risk of seizures)
  - stroke not involving brainstem (due to risk of seizures) – 1 to 5 years
  - transient ischemic attack (TIA, “mini-stroke”) – 1 year
  - intracerebral or subarachnoid hemorrhage not involving brainstem (due to risk of seizures) – 1 to 5 years



# Sleep Apnea Risks, Testing, and Treatment

## Sleep apnea

The risk of crash in persons with untreated OSA is at least 2½ times (range is 21% to about 600% higher) than that of persons without OSA.

Up to one-third of crashes of large trucks  
Are attributable to sleepiness.

Treatment with continuous positive airway pressure (CPAP) lowers crash risk to the same level as that seen in individuals without OSA.



# Sleep Apnea Risks, Testing, and Treatment

## **Sleep apnea**

Obstructive sleep apnea (OSA) risks, testing, and treatment

The FMCSA regulations have no requirements to screen for OSA nor specify testing methods or requirements to assess OSA treatment; but recommends that testing and treatment is considered if a driver has multiple risk factors for OSA.

# Sleep Apnea Risks, Testing, and Treatment

## Sleep apnea

Obstructive sleep apnea (OSA) risks, testing, and treatment

Sleep Apnea Risk Assessment – polysomnogram is recommended when

- Body Mass Index (BMI) is over 40 kg/m<sup>2</sup>:
- BMI is 33 to 40 kg/m<sup>2</sup> and with three or more of the following
  - hypertension and/or Type 2 diabetes, particularly if uncontrolled
  - history of stroke, coronary artery disease or arrhythmias
  - male sex
  - inability to clearly see the back of the throat
  - age at least 42 years
  - apnea witnessed by others
  - loud snoring
  - neck circumference over 17" in men or over 15.5" in women

# Sleep Apnea Risks, Testing, and Treatment

## Sleep apnea

Obstructive sleep apnea (OSA) risks, testing, and treatment

OSA is diagnosed with a polysomnogram (sleep study).

OSA requires treatment when polysomnogram shows apnea-hypopnea index of 15 or more events/hour.

Most common treatment is CPAP, and use must be at least 4 hours nightly, at least 5 of 7 (71% of) days weekly.



# Sleep Apnea Risks, Testing, and Treatment

## **Sleep apnea – advice**

Drivers should know their BMI (know height and weight, use BMI calculator in the internet), and:

- lose weight if their BMI is over 30 kg/m<sup>2</sup>
- undergo a polysomnogram if they meet the criteria of the Medical Review Board and Motor Carrier Safety Advisory Committee on OSA
- undergo treatment for OSA at least 4 hours daily as least 5 days weekly if AHI is 15 or more
- have the following sent or bring the following to their driver's examination
  - a copy of their polysomnogram
  - at least three months of CPAP log report if treated with CPAP.

# Hypertension

## **Hypertension – persistent high blood pressure**

Hypertension increases risk of damage of the brain, heart, kidneys, and blood vessels.

Category	Blood Pressure (mm Hg)		Certification Length
	Systolic	Diastolic	
<b>Normal</b>	120 and under	80 and under	2 years if no past high measurements
<b>Elevated (High-Normal)</b>	121 to 139	81 to 89	
<b>Stage 1 hypertension</b>	140 to 159	90 to 99	1 year, then 3 months, then disqualify
<b>Stage 2 hypertension</b>	160 to 179	100 to 109	3 months, then 1 year when controlled
<b>Stage 3 hypertension (hypertensive crisis)</b>	180 or over	120 or over	disqualify, then 6 months when controlled

# Hypertension

## **Hypertension – advice**

Drivers should

- know what normal blood pressure (BP) is
- measure their BP on a regular basis if it is ever measured over 120/80
- when measuring BP:
  - do not exercise, drink coffee, or smoke cigarettes 30 minutes before test
  - go to the bathroom before the test
  - sit in a chair and relax for at least 5 minutes before the test
  - Make sure your feet are flat on the floor
  - do not talk during the test
  - uncover your arm for the cuff.

# Hypertension

## **Hypertension – advice**

Drivers with high blood pressure should

- know their BMI and lose weight if their BMI is over 30 kg/m<sup>2</sup>
- eat a health diet
- exercise regularly

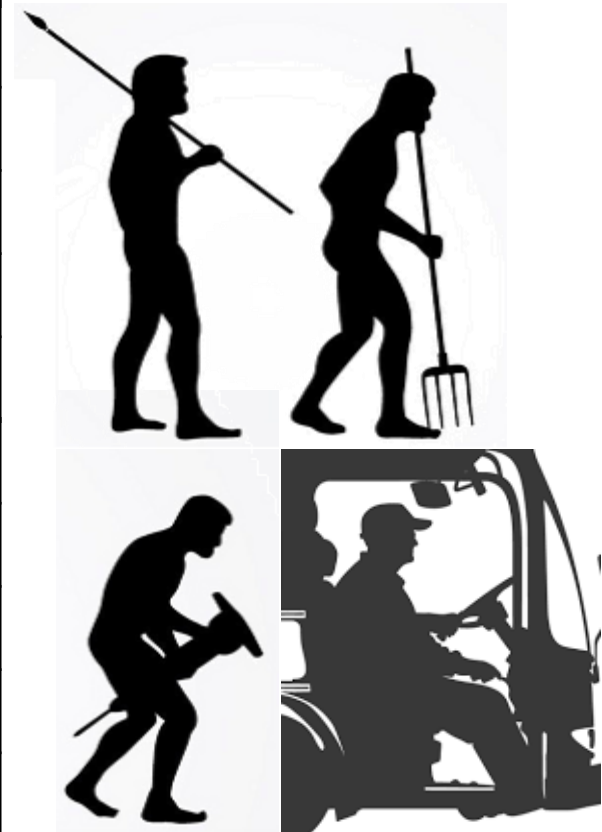


# Cardiovascular Disorders and Physical Abilities

## General considerations

Drivers should have an aerobic capacity of at least 6 metabolic equivalents (METs).

	Level of Activity	Force Applied (pounds)	METs
Men	light	10 to 20	1.6 to 3.9
	moderate	20 to 50	4.0 to 5.9
	heavy	50 to 100	6.0 to 7.9
	very heavy	over 100	8.0 to 9.9
	unduly heavy		at least 10.0
Women	light	10 to 20	1.2 to 2.7
	moderate	20 to 50	2.8 to 4.3
	heavy	50 to 100	4.4 to 5.9
	very heavy	over 100	6.0 to 7.5
	unduly heavy		at least 7.6



# Cardiovascular Disorders and Physical Abilities

## Energy expenditure of various activities

activity		METs
walking on a level surface	1.8 miles/hour	1.8
	3.0 miles/hour	3.2
	4.2 miles/hour	5.3
walking upstairs		4.7
running on a level surface	7.8 miles/hour	12.9
	9.0 miles/hour	14.6
weight-lifting		3 to 7
weight training		10.9
washing floors		3.3
making beds		3 to 5
shoveling snow		5.1
truck operations	driving	2.0
	loading and unloading, tying down loads, standing, and carrying heavy loads	6.5

# Cardiovascular Disorders and Physical Abilities

## General considerations

Drivers are expected to be able to assume three point of contact

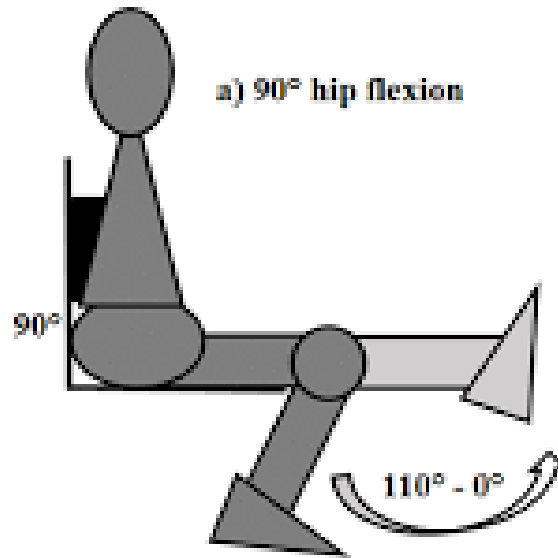


# Cardiovascular Disorders and Physical Abilities

## General considerations

Drivers are expected to

- have 90° of hip flexion  
(normal hip flexion is typically considered 110 to 120 °)
- be able to bend, stoop, crouch



# Cardiovascular Disorders and Physical Abilities

## **Recommended waiting periods and evaluation after certain disorders**

Waiting period suggested in the *Medical Examiner's Handbook*

- cardiovascular disorders
  - myocardial infarction (MI, heart attack) – wait for 4 to 6 weeks and undergo an exercise tolerance test (ETT) showing no ischemia, then ETT biennially
  - coronary artery bypass graft – 3 months (for proper healing), then ETT after 5 years
  - angioplasty (PCI) – 1 week
  - pacemaker placement – must be working and effective in preventing disabling symptoms
- blood clots (pulmonary embolism – PE and deep vein thrombosis – DVT) – after adequate treatment

# Cardiovascular Disorders and Physical Abilities

## **Anticoagulant use for thromboembolism**

Use of anticoagulants reduces likelihood of recurrent thromboembolism by about 80%.

Drivers who have had or at risk for thromboembolism should be appropriately anticoagulated.

Having records sent to the medical examiner from the treating clinician may expedite certification.

# Cardiovascular Disorders and Physical Abilities

## **Implanted cardioverter-defibrillators**

Implanted cardioverter-defibrillators are disqualifying.

# Cardiovascular Disorders and Physical Abilities

## **Cardiovascular disorders and exercise tolerance (stress) tests**

Exercise tolerance tests are recommended:

- 4 to 6 weeks after a myocardial infarction (MI, heart attack), then every 2 years
- 5 years after a coronary artery bypass graft, then (maybe) every 2 years



**MaineGeneral Medical Center**   
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**Thank you for attending.**